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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/619,497	**Applicant(s)** IWASAKI, MASAJIRO
	Examiner Patrick A. Darno	**Art Unit** 2163

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _11/21/2006_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-27_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-27_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _16 July 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 8, 15, and 22 have been amended. Claims 1-27 are pending in this office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-3 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Number 6,240,424 issued to Kyoji Hirata (hereinafter "Hirata").

Claim 1:

Hirata teaches a method of classifying an image, comprising the steps of:

a) extracting a query image from a plurality of images stored in an image database in correspondence with feature data *(Hirata: column 5, lines 58-65)*;

b) searching, according to a predetermined similarity level, for a representative image resembling the query image in a representative image classification database in which each group of images is represented by respective representative images *(Hirata: column 5, lines 36-40; Note that images are "classified under one primary object". Here the primary object is the representative image (See Hirata column 4, lines 66-67). Also note column 4, lines 7-8 and column 5, lines 58-65.)*;

c) registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level *(Hirata: column 4, lines 1-14; This reference shows the*

steps for creating a new representative image. This would be done when an image does not fit into any category already determined.); and

d) adding the query image into a group represented by the resembling representative image found as a result of the search according to the predetermined similarity level *(Hirata column 4, lines 9-14 and column 7, lines 7-10).*

Claim 2:

Hirata teaches all the elements of claim 1, as noted above, and Hirata further teaches wherein the images in the image database are obtainable by referring to the respective representative images in accordance with the predetermined similarity level *(Hirata: column 5, line 58-column 6, line 1 and Fig. 5; Note that the primary object is the representative image as shown at column 4, lines 66-67.).*

Claim 3:

Hirata teaches all the elements of claim 1, as noted above, and Hirata comprising a step of forming the groups into a hierarchical structure *(Hirata: Figs. 2A, 2B and also column 5, lines 38-40; Note in column 5, lines 38-40 states "classified under one primary object". This further shows the hierarchical structure of images under a representative image (here the primary object).)*, wherein the forming step further includes the steps of:

a) extracting a further query image from the representative images in the representative images classification database *(Hirata: column 5, lines 36-40; Note that images are "classified under one primary object". Here the primary object is the representative image (See Hirata column 4, lines 66-67). Also note column 4, lines 7-8 and column 5, lines 58-65.)*;

b) searching, according to a further predetermined similarity level, for a further representative image resembling the further query image in a further representative image classification database in which groups of images are represented by respective further representative images *(Hirata: column 5, lines 36-40; Note that images are "classified under one primary object". Here the primary object is the representative image (See Hirata column 4, lines 66-67). Also note column 4, lines 7-8 and column 5, lines 58-65.)*;

c) registering the further query image as a new further representative image in the further representative image classification database when no resembling further representative image is found as a result of the search according to the further predetermined similarity level *(Hirata: column 4, lines 1-14; This reference shows the steps for creating a new representative image. This would be done when an image does not fit into any category already determined.)*; and

adding the further query image into a group represented by the resembling further representative image found as a result of the search according to the further predetermined similarity level *(Hirata column 4, lines 9-14 and column 7, lines 7-10)*.

<u>Claim 26:</u>

Claim 26 is rejected under the same reasons set forth in the rejection of claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata in further view of U.S. Patent Application Publication Number 2003/0011683 issued to Fumitomo Yamasaki et al. (hereinafter "Yamasaki").

Claim 4:

Hirata discloses all the elements of claim 3, as noted above, but does not explicitly disclose wherein the hierarchical structure is formed as layers of a directory of a file system for managing the images in the image database.

However, Yamasaki discloses wherein the hierarchical structure is formed as layers of a directory of a file system for managing the images in the image database *(Yamasaki: paragraphs [0087], [0089], and Fig. 9)*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hirata with the teachings of Yamasaki noted above forming a directory structure of images *(Yamasaki: paragraph [0089])*. The skilled artisan would have been motivated to improve the teachings of Hirata per the above such that using the hierarchical structure, the user can readily sort out image data *(Yamasaki: paragraph [0091], lines 1-5)*

3. Claims 5-7, 12-14, 19-21, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over NPL article titled "Recursive Space Decompositions in Force-Directed Graph Drawing Algorithms" written by K.J. Pulo (hereinafter "Pulo") if further view of U.S. Patent Application 2003/0198384 issued to Michael Vrhel (hereinafter "Vrhel").

Claim 5:

Pulo discloses an image feature space display method comprising the steps of:

a) determining k representative points (k being an integer which is more than 1) in a feature space in response to a distance between points in the feature space and representative points representative of a plurality of feature spaces surrounding the feature space *(Pulo: Section 3.2 Finding The Characteristic Points, lines 39-40; Note that the k-means algorithm performs the all the same functionality described here. Section 2.2, lines 8-15 further describes the grouping of objects with respect to proximity and spatial location (distance).)*;

b) obtaining k sub-feature spaces by evenly allocating the points in the feature space into k representative points *(Pulo: Section 3.2 Finding The Characteristic Points, lines 41-43)*;

c) dividing a display space into sub-display regions of k segments, the display space being divided in a manner so that the sub-feature spaces correspond to the sub-display regions *(Pulo: Section 2.2 Recursive Space Decompositions (RSDs), lines 1-5; Note that this describes the function of an RSD. The k-means algorithm is a type of RSD (Section 2.2 Recursive Space Decompositions (RSDs), lines 41-45).)*;

d) repeating the steps a) through c) until the sub-feature spaces and the sub-display regions are divided into minimum units, respectively *(Pulo: Section 2.2 Recursive Space Decompositions (RSDs), lines 2-3 and Section 3.2 Finding The Characteristic Points, lines 43-45; These two citations display a clear reference to the recursive nature of the k-means algorithm which results in the repeating of steps a, b, and c.)*; and

Pulo discloses the k-means algorithm for carrying out the previous limitations cited above, but Pulo does not explicitly disclose applying the k-means function for segmenting images. However, Vrhel discloses applying the k-means function to images for the purpose of segmenting the image *(Vrhel: paragraph [0017], lines 6-9)*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Pulo with the teachings of Vrhel noted above. The skilled

artisan would have been motivated to apply the teachings of Pulo per the above in order to classify individual pixels from an image into particular groups *(Vrhel: paragraph [0010], lines 1-4)*.

Pulo does not explicitly disclose e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions. However, Vrhel discloses e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions *(Vrhel: paragraph [0018], lines 17-21)*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Pulo with the teachings of Vrhel noted above for the purpose of having units of a feature space corresponding to units of a display (image) *(Vrhel: paragraph [0018], lines 17-21)*. The skilled artisan would have been motivated to improve the teachings of Pulo per the above such that each feature identifies a particular portion of the display (image) *(Vrhel: paragraph [0003], lines 8-11)*.

Claim 6:

The combination of Pulo and Vrhel discloses all the elements of claim 5, as noted above, and Pulo further discloses wherein the display space is two dimensional *(Pulo: Section 2.2 Recursive Space Decompositions (RSDs), lines 13-15)*, wherein the feature space and the display space are divided into four sub-feature spaces and four sub-display regions in a grid manner *(Pulo: Section 2.2, lines 46-55 and Fig. 2)*, respectively, wherein the representative points are disposed proximally with respect to two feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to two other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces *(Pulo: Fig. 2)*.

Claim 7:

The combination of Pulo and Vrhel discloses all the elements of claim 5, wherein the display space is three-dimensional *(Pulo: Section 3.1 Description, lines 1-2; This reference suggests a handling a variable dimension space (d-dimensional).* So three dimensional must be one of the cases considered.), wherein the feature space and the display space are divided into eight sub-feature spaces and eight display regions in a grid manner *(Pulo: Section 2.2, lines 16-30; The specific example chosen by Pulo is one that divides regions by 4. This is further seen in Fig. 2. However, in Section 2.2, lines 20-22, it is explicitly stated that irregular RSDs (like the k-means algorithm) "may divide space into arbitrarily sized and shaped regions at each level." This surely covers all types of sub-divisions, including where the feature space and display regions are divided by 8.)*, respectively, wherein the representative points are disposed proximally with respect to three feature spaces which are arranged adjacent to each other and tangent to the sub-feature spaces, and thus disposed distally with respect to three other feature spaces which are arranged adjacent to each other but not tangent to the sub-feature spaces *(Pulo: This can be seen with respect to two dimensions in Fig. 2. While a diagram is not given for an example of 3-dimensions, the references cited above in the rejection of this claim state that it would be possible to have a 3-dimensional space (d-dimensional) and divide by the sub-feature space and display region by 8 ("arbitrarily sized and shaped regions").).*

Claim 12:

Claim 12 is a computer program product claim corresponding to method claim 5 and is rejected under the same reasons set forth in the rejection of claim 5.

Claim 13:

Claim 13 is a computer program product claim corresponding to method claim 6 and is rejected under the same reasons set forth in the rejection of claim 6.

Claim 14:

Claim 14 is a computer program product claim corresponding to method claim 7 and is rejected under the same reasons as set forth in the rejection of claim 7.

Claim 19:

Claim 19 is a computer program product claim corresponding to method claim 5 and is rejected under the same reasons set forth in the rejection of claim 5.

Claim 20:

Claim 20 is a computer program product claim corresponding to method claim 6 and is rejected under the same reasons set forth in the rejection of claim 6.

Claim 21:

Claim 21 is a computer program product claim corresponding to method claim 7 and is rejected under the same reasons set forth in the rejection of claim 7.

Claim 27:

Claim 27 is rejected under the same reasons set forth in the rejection of claim 5.

4. Claims 8-9, 15-16, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pulo in further view of Vrhel and further in view of Hirata.

Claim 8:

The combination of Pulo and Vrhel discloses all the elements of claim 5, as noted above, but the combination does not explicitly disclose wherein the points in the feature space represent images in a representative image classification database which are subject to the steps of:

a) extracting a query image from a plurality of images stored in an image database in correspondence with feature data;

b) searching, according to a predetermined similarity level, for a representative image resembling the query image in the representative image classification database in which groups of images are represented by respective representative images;

c) registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level; and

d) adding the query image into a group represented by the resembling representative image found as a result of the search according similarity level the predetermined.

However, Hirata discloses wherein the points in the feature space represent images in a representative image classification database, which are subject to the steps of:

a) extracting a query image from a plurality of images stored in an image database in correspondence with feature data *(Hirata: column 5, lines 58-65)*;

b) searching, according to a predetermined similarity level, for a representative image resembling the query image in the representative image classification database in which groups of images are represented by respective representative images *(Hirata: column 5, lines 36-40; Note that images are "classified under one primary object". Here the primary object is the representative image (See Hirata column 4, lines 66-67). Also note column 4, lines 7-8 and column 5, lines 58-65.)*;

c) registering the query image as a new representative image in the representative image classification database when no resembling representative image is found as a result of the search according to the predetermined similarity level *(Hirata: column 4, lines 1-14; This reference shows the*

steps for creating a new representative image. This would be done when an image does not fit into any category already determined.); and

d) adding the query image into a group represented by the resembling representative image found as a result of the search according similarity level the predetermined *(Hirata column 4, lines 9-14 and column 7, lines 7-10).*

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previously mentioned combination with the teachings of Hirata noted above for the purpose of classifying and querying a database of images *(Hirata: Abstract).* The skilled artisan would have been motivated to improve the previously mentioned combination per the above such images could be classified to a group based on the similarity to a representative image of the group *(Hirata: column 4, lines 1-14).*

Claim 9:

The combination of Pulo, Vrhel, and Hirata discloses all the elements of claim 8, as noted above, and Hirata further discloses comprising a step of forming the groups into a hierarchical structure, wherein the forming step further includes the steps of:

a) extracting a further query image from the representative images in the representative image classification database *(Hirata: column 5, lines 58-65)*;

b) searching, according a further predetermined similarity level, for a further representative image resembling further query image in a further representative image classification database in which groups of images are represented by respective further representative images *(Hirata: column 5, lines 36-40; Note that images are "classified under one primary*

object". Here the primary object is the representative image (See Hirata column 4, lines 66-67). Also note column 4, lines 7-8 and column 5, lines 58-65.);

c) registering the further query image as a new further representative image in the further representative image classification database when no resembling further representative image is found as result of the search according to the further predetermined similarity level *(Hirata: column 4, lines 1-14; This reference shows the steps for creating a new representative image. This would be done when an image does not fit into any category already determined.)*; and

d) adding the further query image into a group represented by the resembling further representative image found as a result of the search according to the further predetermined similarity level *(Hirata column 4, lines 9-14 and column 7, lines 7-10).*

<u>Claim 15:</u>

Claim 15 is a computer program product claim corresponding to method claim 8 and is rejected under the same reasons set forth in the rejection of claim 8.

<u>Claim 16:</u>

Claim 16 is a computer program product claim corresponding to method claim 9 and is rejected under the same reasons set forth in the rejection of claim 9.

<u>Claim 22:</u>

Claim 22 is a computer program product claim corresponding to method claim 8 and is rejected under the same reasons set forth in the rejection of claim 8.

<u>Claim 23:</u>

Claim 23 is a computer program product claim corresponding to method claim 9 and is rejected under the same reasons set forth in the rejection of claim 9.

5. Claims 10-11, 17-18, and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pulo in further view of Vrhel and further in view of U.S. Patent Application Publication Number 2003/0059121 issued to Andreas E. Savakis et al. (hereinafter "Savakis").

Claim 10:

Pulo discloses an image feature space display method comprising the steps of:

a) dividing a feature space into three sub-feature spaces, the three sub-feature spaces being composed two sub-feature spaces disposed within a prescribed radius with respect to two reference points in the feature space, and another sub-feature space other than the two sub-feature spaces *(Pulo: Section 3.2 Finding The Characteristic Points, lines 39-40; Note that the k-means algorithm performs the all the same functionality described here. Section 2.2, lines 8-15 further describes the grouping of objects with respect to proximity and spatial location (distance). Further note that Pulo discloses dividing into a k (variable) amount of subsections.)*;

b) dividing a display space into sub-display regions of three segments, the display space being divided a same manner as the feature space so that the sub-feature spaces correspond to the sub-display regions *(Pulo: Section 2.2 Recursive Space Decompositions (RSDs), lines 1-5; Note that this describes the function of an RSD. The k-means algorithm is a type of RSD (Section 2.2 Recursive Space Decompositions (RSDs), lines 41-45).)*;

c) repeating the steps a) and b) the sub-feature spaces and the sub-display regions are divided into minimum units, respectively *(Pulo: Section 2.2 Recursive Space Decompositions (RSDs), lines 2-3 and Section 3.2 Finding The Characteristic Points, lines 43-45; These two citations display a clear reference to the recursive nature of the k-means algorithm which results in the repeating of steps a, b, and c.)*; and

Pulo discloses the k-means algorithm for carrying out the previous limitations cited above, but Pulo does not explicitly disclose applying the k-means function for segmenting images. However, Vrhel discloses applying the k-means function to images for the purpose of segmenting the image *(Vrhel: paragraph [0017], lines 6-9)*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Pulo with the teachings of Vrhel noted above. The skilled artisan would have been motivated to apply the teachings of Pulo per the above in order to classify individual pixels from an image into particular groups *(Vrhel: paragraph [0010], lines 1-4)*.

Pulo does not explicitly disclose e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions. However, Vrhel discloses e) arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions *(Vrhel: paragraph [0018], lines 17-21)*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Pulo with the teachings of Vrhel noted above for the purpose of having units of a feature space corresponding to units of a display (image) *(Vrhel: paragraph [0018], lines 17-21)*. The skilled artisan would have been motivated to improve the teachings of Pulo per the above such that each feature identifies a particular portion of the display (image) *(Vrhel: paragraph [0003], lines 8-11)*.

The combination of Pulo and Vrhel does not explicitly disclose dividing the feature space and the display space into specifically three subsections. However, Savakis discloses using the k-means function to divide subject matter into three subsections *(Savakis: paragraph [0082], lines 2-4)*.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the previously mentioned combination with the teachings of Savakis noted above. The skilled artisan would have been motivated to improve the previously mentioned combination because Pulo specifically suggests that the subdivisions produced by the k-means algorithm (an irregular RSD) may divided subject matter into any arbitrary size and shape *(Pulo: Section 2.2, lines 20-22; Therefore a larger shape results in less subdivisions and larger shape results in more subdivisions. This leaves selecting 3 subdivisions as a design choice.).*

Claim 11:

The combination of Pulo, Vrhel, and Savakis discloses all the elements of claim 10, as noted above, and Pulo further discloses wherein the reference points are selected from points disposed nearest to representative points included in the two sub-feature spaces *(Pulo: Section 3.2, lines 39-43 and Section 2.2, lines 8-15).*

Claim 17:

Claim 17 is a computer program product claim corresponding to method claim 10 and is rejected under the same reasons set forth in the rejection of claim 10.

Claim 18:

Claim 18 is a computer program product claim corresponding to method claim 11 and is rejected under the same reasons set forth in the rejection of claim 11.

Claim 24:

Claim 24 is a computer program product claim corresponding to method claim 10 and is rejected under the same reasons set forth in the rejection of claim 10.

Claim 25:

Claim 25 is a computer program product claim corresponding to method claim 11 and is rejected under the same reasons set forth in the rejection of claim 11.

Response to Arguments

Applicant Argues:

Applicant respectfully submits that Hirata does not disclose a method of classifying an image comprising the step of, *inter alia*,"extracting a query image from a plurality of images stored in an image database in correspondence with feature data," as recited by claim 1. As noted by the Office Action, Hirata classifies images "under one primary object." (Hirata, col. 5, lines 36-40). This differs from the claimed invention in which "each group of images is represented by a respective *representative image*" and not under "one primary object," as in Hirata.

Examiner Responds:

Examiner is not persuaded. Hirata does indeed disclose a "extracting a query image from a plurality of images stored in an image database in correspondence with feature data" (Hirata: Hirata: column 5, lines 58-65). The Examiner is confident that the reference cited here is clear enough that no further explanation is needed.

Furthermore, the Hirata reference clearly discloses a representative image (primary object), which is used to classify a group of images (cluster). The Hirata references also show representing the group of images (cluster) by a respective representative image (primary object). Furthermore, the abstract of the Hirata reference, which sets forth the central meaning of the invention, clearly discloses, "**A method and apparatus for classifying** and querying **a database of images**, in which **the images in the database are classified using primary objects as a clustering center**."

Support for the Examiner's statements given here is clearly indicated in the preceding office action. Each element of the Applicant's claimed invention has been mapped to the prior art. The rejections given above are upheld.

Applicant Argues:

Applicant respectfully submits that the cited references do not disclose, teach or suggest the claimed invention. Claims 5, 12, and 19 recite, inter alia, "arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions." As stated in the Office Action, Pulo does not disclose this limitation as well as other limitations in the claims. Vrhel does not remedy the deficiencies of Pulo. On the other hand, Vrhel performs a "blurring operation" on pixels of an image. Vrhel, ¶ 0018. The blurring operation corrects "discontinuous or disjointed segments." Vrhel, ¶ 0018. Thus, the blurring is used to sharpen the original RGB image, whereas the present invention *arranges* "*each* image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions." Vrhel's blurring operation varies from the arrangement of images in the present invention. Also, Pulo teaches a method for computing a drawing of a graph. Because Pulo and Vrhel do not teach or suggest all of the limitations of claims 5, 12, and 19, claims 5, 12, and 19 are not obvious over the cited references.

Examiner Responds:

Examiner is not persuaded. Vrhel clearly discloses "arranging each image included in a minimum unit of a sub-feature space to a corresponding one of the minimum units of the sub-display regions" (Vrhel: paragraph [0003], lines 8-11 and paragraph [0018], lines 17-21).

Specifically, the Vrhel reference discloses a sub-feature space (image shown in fig. 2a,b,c,d) wherein a minimum unit (Box D) of the sub-feature space includes images (pixels) that are arranged corresponding to another one of the minimum units of the sub-display regions (note that pixels are selected corresponding to a segmented or isolated feature) (Vrhel: paragraph [0018], lines 17-21). In simpler terms, the software set forth by Vrhel first captures an image, analyzes the image, and then places each pixel into a corresponding color category (Vrhel: paragraph [0003], lines 8-11).

The Examiner has specifically and reasonably mapped all the limitations of the Applicant's claimed invention. Furthermore, the Examiner has provided proper and reasonable motivation to combine the references cited above in order to show that inventions set forth in claims 5, 12, and 19 are in fact obvious to one of ordinary skill in the art. In light of the evidence presented above, the Examiner has decided to uphold the previously given 35 U.S.C. 103(a) rejection.

The Applicant Argues:

Applicant respectfully submits that, absent hindsight of the claimed invention, one of ordinary skill in the art would not be motivated to combine Pulo and Vrhel, because the technologies of Pulo and Vrhel are significantly different from the claimed invention.

Furthermore, Pulo fails to teach or suggest how to modify Vrhel to obtain the claimed invention. There is therefore no *prima facie* case of obviousness.

Applicant respectfully submits that there is no motivation to combine the cited references to obtain the invention of claims 5-7, 12-14, 19-21, and 27.

The Office Action has done no more than cite a pair of references, each of which allegedly provides only part of the claimed invention, and allege that their combination renders the invention obvious.

The Examiner Responds:

The Examiner is not persuaded. The Examiner has made it abundantly clear in the preceding office action that the combination of Pulo and Vrhel discloses the Applicant's invention as claimed in claims 5-7, 12-14, 19-21, and 27. For further proof of this, the Examiner directs the Applicant to the Examiner's preceding office action.

The Examiner respectfully disagrees that the Pulo and Vrhel reference disclose different technologies. Both references perform segmenting or decomposing objects using the K-means Algorithm. This is clearly pointed out in the Examiner's office action.

Furthermore, it is pointed out that the Vrhel reference specifically states that using the K-means algorithm to segment and analyze images is well known in the art (Vrhel paragraph [0017], lines 6-9). This is a clear suggestion to combine the references. Furthermore, the Examiner has clearly pointed out for each independent claim the proper motivation to combine references. The Examiner again directs the Applicant to the Examiner's preceding office action. There is not a single claim rejected under 35 U.S.C. 103(a) that lacks a motivation to combine the references. All dependent claims inherit the motivation from the independent claims.

The Examiner has clearly and precisely presented a prima facie case of obviousness that adheres closely to the guidelines set forth by Graham v. John Deere Co.

Finally, in response to applicant's argument that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Since the Vrhel reference clearly suggests the K-means algorithm in order to segment and analyze images, the Examiner believes that only knowledge, which was within the level of ordinary skill at the time the claimed invention was made, was used in order to construct the Examiner's prima facie case of obviousness. Because only knowledge within the level of ordinary skill at the time the claimed invention was made is used in the Examiner's rejection, it

is clear that no knowledge gleaned only from the Applicant's disclosure was used. Therefore, the rejections given under 35 U.S.C. 103(a) are upheld.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick A. Darno whose telephone number is (571) 272-0788. The examiner can normally be reached on Monday - Friday, 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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